

SWOON
POWERED BY DIP-TECH
THE MAGIC OF DIGITAL CERAMIC IN-GLASS PRINTING

General Questions on Digital Ceramic In-Glass Printing

What are the different types of printing on glass?

There are 3 major printing on glass techniques:

- a. Traditional screen printing using ceramic ink
- b. Digital printing using UV ink
- c. Digital printing using ceramic ink

How long does a digital ceramic printed image last?

The digital ceramic printing solution ensures long lasting printed images, which do not fade nor change in color, with absolute durability for many decades.

What is the best way to clean printed glass? Is it sensitive to chemicals?

The digital ceramic printing on glass provides high resistance to chemicals. So the glass can be cleaned like any other glass.

What happens to the printed glass in extreme weather conditions?

Since the ink is fused into the glass, the printing will stand up to harsh weather conditions, providing long-lasting and vivid colors.

What is the difference between digital ceramic printing on glass and traditional/screen printing?

Dip-Tech digital in-glass printing removes all the limitations of screen printing which is:

- Limited to up to 3 colors
- Requires purchasing, maintaining and storing screens
- High ink wastage
- Low printing accuracy

With digital ceramic printing in-glass, you can print any design and any color in glass, with complete predictability, repeatability and ceramic ink durability.

What is so special about digital ceramic printing in-glass and how is it different from any other digital printing on glass?

The digital ceramic ink provides long-lasting, vivid colors that are fused into the glass for outstanding durability, even in extreme conditions:

- Ceramic inks offer unmatched resistance to scratching, acid, UV and weather, ensuring long-lasting vivid colors.
- During the tempering process, the inks are fused directly into the glass so that the printed image lasts as long as the glass. In all other digital printing, the ink is printed on top of the tempered glass and does not fuse into the glass.
- Ceramic inks are compliant with the demanding industry standards for quality and durability.

What are the glass applications that digital ceramic printing can support?

The digital ceramic printing supports any exterior and interior functionality.

Exterior: Facades, canopies, balustrades, windows, etc.

Interior: Backsplash, doors, showers, office dividers, furniture, etc.

Can the printed glass be laminated? Insulated? Bent?

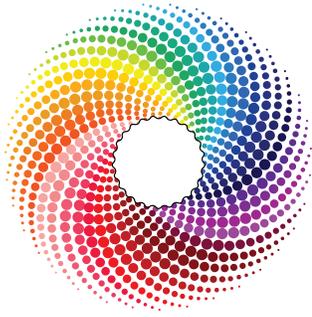
Yes, yes, and yes - the digital ceramic printing can be combined with any of the above.

Can you control energy efficiency and glass opacity using digital ceramic printing?

Yes, the unique digital in-glass printing technology with ceramic ink supports light diffusion, light transmission, energy efficiency, solar control, conductivity, anti-skid, privacy levels and other functional requirements.

Benefits of Digital Printing with Ceramic Ink

Features	Screen	UV	SWOON
Fixed Costs (screens, storage, maintenance)	Extremely high	None	None
Setup Time	Very long	None	None
Effectiveness	High volume - identical panels	Low volume - customized panels	Low to high volume - highly customized panels
Interior/Exterior	Both	Interior only	Both
Multi-Color Images	Maximum 3 colors	Unlimited	Unlimited
Customizable	Low	High	High
Transparency	Semi controlled	Hardly controlled	Fully controlled
UV/Acid/Humidity Resistant	High	Very Low	High
Functional Inks (etch, slip resistance, conductive)	Yes	No	Yes
Scratch Resistant	High	Low	High
Applied on Curved Surface	Yes	No	Yes
Tempering	After printing	Before printing	After printing
Laminated Glass	Yes	Limited	Yes
Insulated Glass - border printing	Yes	No	Yes
Coated Glass	Some	None	Some



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Digital Ceramic In-Glass Printing FAQs

(Frequently Asked Questions)

What is the maximum printable size?

86" x 149"

What is the minimum printable size?

3/4" thick glass: 15" x 15"
other thicknesses: 4" x 10"

Can you print on shapes?

Yes, we can print on oval, circular, triangular, or any odd shapes.

Can you print on mirrors?

No, we can't because the printed glass must be sent through the tempering oven to cure the ceramic ink which bonds it to the glass. Mirrors cannot be tempered, so no, we cannot print on mirrors.

Can you print on curved surfaces?

No, we can only print on flat surfaces. However, it is possible for the printed glass to then be bent.

Is the image viewable from only one side?

The image is actually viewable from both sides, although up close, one side is slightly sharper than the other. Typically, one side will be the mirror image of the other side. So, if you print words, they will appear correct on one side and in reverse on the opposite side.

If you have a project which includes words or numbers, and you need to be able to read the text from both sides, we can print it using a special "Double-Vision" method.

Can you print copyrighted material?

It is illegal to print copyrighted material, unless you have acquired proper licensing and/or written permission from the copyright holder.

Can you match to a Pantone color swatch?

Not always. Since the inks have to be able to survive the tempering process (which reaches temperatures of over 980 degrees centigrade), the ceramic ink pigments must be made of inorganic materials. Currently, there is not a non-toxic equivalent for magenta (which is used in mixing Pantone colors), so there are some colors that we cannot match exactly and a color shift may occur.

Fun Facts: The ceramic inkjet printer that we use to print on glass is housed in its own climate-controlled room. It uses ceramic ink that contains ultra fine glass frit that is mixed with the inorganic pigment.

The ceramic ink printing process uses various densities of ink on the surface and is measured in microns. (A micron is 1/1000 of a millimeter or 1/25 of a thousandth of an inch. There are 25,400 microns in an inch. Red blood cells are about 10 microns in diameter and human hair is usually between 10-100 microns in diameter.)

The technology used actually releases tiny drops of ink that fall onto the glass surface where they mix to create a variety of colors. Because of the special way the colors are mixed on the glass, it is possible to see the image from either side of the glass. We can print up to 720 dpi.